

REMARKS**Specification**

In response to the Examiner's objections, various sections of the specification have had appropriate headings substituted for the headings in the original application and Field of the Invention and Summary of the Invention sections have been added. Since these sections contain subject matter which is substantially the same as that contained in the Abstract and/or claims of the original application, subject matter which is amplified in the specification, the addition of these sections does not result in the introduction of any new matter into the application. The Abstract has also been moved to the last page of the application. It is believed that with these changes, the application is now in proper form and it is therefore respectfully requested that the objection to the specification be withdrawn.

Claim Rejection – 35 U.S.C. §112

The Examiner has objected to claim 21. However, both claims 21 and 22 were cancelled in the Preliminary Amendment filed with the application. The objection to claim 21 is therefore moot.

The Examiner has also rejected claims 9 and 18 as being indefinite, the Examiner indicating that the "step of monitoring a time dependent variable and selecting an impulse response" is vague "as a time dependent variable can represent a broad number of variables". These claims are directed, to for example, a mode of operation such as that discussed at the top of page 30 wherein a time varying effect can be simulated by storing a plurality of impulse responses which occur at various times for the particular effect, and then selecting the appropriate impulse response as a function of a time dependent variable. While the Examiner is correct that this term can represent a broad number of variables, depending on the effect being simulated, a very broad range of potential time dependent variables may be simulated, and the claim is therefore of appropriate scope. The example given in the specification is a rotated Leslie speaker, the angular position of which varies with time as a function of the rotation rate of the speaker. Therefore, the time dependent variable in this instance might be angular position. In view of the above, it is respectfully requested that the objection to claims 9 and 18 be withdrawn.

Claim Rejection 35 U.S.C. §102

Finally, the Examiner has rejected claims 1, 2, 8, 10, 11, 17, 19, 20 and 22 as being anticipated by Terano (U.S. Patent No. 5,982,902). The Examiner's basis for this rejection is that Terano teaches storing impulse responses and convolving such stored impulse responses with an applied input signal to obtain a desired output. For reasons to be discussed in the following paragraphs, this is not a proper characterization of what is taught in Terano.

Terano is primarily concerned with adding sound effects to a musical performance which may be atmospheric sounds, such as birds chirping or a brook babbling, or sounds from a concert hall, such as clapping, etc. These sounds, either recorded or artificially generated, are stored, and then are mixed with the musical performance in a manner so as not to overlap or interfere with the music. The stored sound effects therefore do not alter the musical performance, they are merely mixed with the musical performance to supplement the resulting output.

By contrast, the Applicant's store impulse responses for various sound-altering conditions and select the appropriate impulse response at a selected interval in the performance based on selected criteria which impulse response is convolved with the musical performance to alter the sound of the performance. Thus, Terano and the Applicant are addressing completely different objectives, are storing completing different information, are selecting information from storage to be used based on different criteria and are using information retrieved from storage in a different way.

The Examiner is correct in that Figs. 4A and 4B do show an impulse response being convolved to produce an output. However, the impulse response in this instance is not stored but, as indicated in Column 5, is generated as required. Further, the impulse response is not convolved with the input signal, but is instead convolved with the sound effect obtained from the sound effect library in order for example to take into account the effect of reflected sound or head considerations for the stored sound effect. Nowhere does Terano either show or in any way suggest the storing of a plurality of impulse responses and the selective utilization of such impulse responses to modify a received musical performance or other input.

The differences indicated above are clearly reflected in the claims. For example, claim 1 starts as a "method of simulating an audio effect processor". Terano neither shows nor suggests a method for simulating an audio effect processor. More important, step (a) involves "storing the

impulse response of the audio processor for at least two impulses". As indicated above, Terano does not teach storing impulse responses and, to the extent Terano needs an impulse response, he generates it as required. Terano also does not repeatedly assess a characteristic of an input signal as required in step (b), nor does Terano select at least one of the impulse responses to apply to the input signal dependent on the result of the assessment as required by step (c). Finally, Terano does not teach applying an impulse response selected from the stored impulse responses to the input signal to derive an output signal, Terano, to the extent he uses an impulse response, applying such impulse response to the stored sound effect rather than to the input signal.

Thus, since each step of claim 1 involves operations which are not taught in Terano, Terano is clearly not a §102 reference against claim 1, and it is respectfully requested that the rejection of claim 1 on Terano be withdrawn. Further, since Terano neither shows nor in any way suggests simulating an audio effect processor, and in particular simulating such processor by storing a plurality of impulse responses, selecting an appropriate impulse response at a given sample interval from stored impulse responses based on an assessment and applying the selected impulse response to the input signal to derive an output signal, Terano is also not an appropriate reference against claim 1 under 35 U.S.C. §103. Claim 1 therefore presents both novel and patentable subject matter.

Claims 2-9 all being dependent on claim 1 and therefore containing all the limitations thereof, are also patentable for at least the same reasons discussed with respect to claim 1. Further, most of these claims also contain additional novel subject matter further distinguishing over Terano. For example, claim 2 provides additional details of both the storing step and of the applying step. The Examiner has kindly indicated claims 3-7 as containing allowable subject matter. Claim 9, as indicated above, involves varying the impulse response applied to the input in response to a time dependent variable, something which is neither shown nor in any way suggested by Terano. Claim 19 requires showing impulse responses for a plurality of different audio processors, something which again is neither shown or suggested by Terano.

Claim 10 is an apparatus claim of a scope substantially the same as claim 1 and is allowable for at least the same reasons discussed above with respect to claim 1. Rejected claims 11, 17 and 20 being dependent on claim 10, and incorporating all of the limitations thereof, are also allowable for at least the same reasons discussed above with respect to claim 10. Further, claim 11 is allowable for at least the same reasons discussed above with respect to claim 2, claim

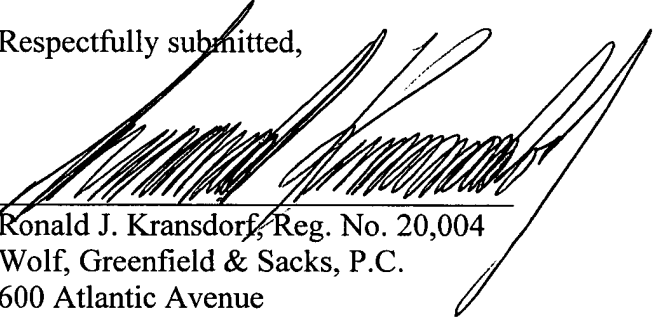
18 is allowable for at least the same reasons discussed with respect to claim 9, and claim 20 is allowable for at least the reasons discussed above with respect to claim 19.

CONCLUSION

In view of the foregoing amendments and remarks, this application should now be in condition for allowance. A notice to this effect is respectfully requested. If the Examiner believes, after this amendment, that the application is not in condition for allowance, the Examiner is requested to call the Applicant's attorney at the telephone number listed below.

If this response is not considered timely filed and if a request for an extension of time is otherwise absent, Applicant hereby requests any necessary extension of time. If there is a fee occasioned by this response, including an extension fee, that is not covered by an enclosed check, please charge any deficiency to Deposit Account No. 23/2825.

Respectfully submitted,



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In the Drawings

The invention is described by means of reference to the attached figures which are described in detail after the following summary explanation.

5 Fig. 1 shows the process of analyzing an existing effect unit by means of applying an impulse and recording its impulse response.

Fig. 2 shows the application of an input sound stream to generate a processed output stream by convolution with the sampled impulse response.

10 Fig. 3 shows the application of impulses of different magnitudes to an effect unit to obtain more than one impulse response appropriate to different impulse amplitudes.

Fig. 4 shows the application of an input stream to generate a processed output stream by modifying the convolution so that a different impulse response may be applied to different input samples – in this case depending on amplitude of the input sample